PROJECT NUMBER: 1708
PROJECT TITLE: Physical Chemistry and Process Monitoring
PROJECT LEADER: J. L. Banyasz
PERIOD COVERED: April, 1989

I. **OPERATIONS SUPPORT (J. Crump and A. Closter, in collaboration with the Applied Technology Group)**

A. **Objective**: Determine the effects of particle size distribution on dynamic viscosity changes that occur in PVA tipping adhesives.

B. **Results**: The Mark 10A simulator is currently being set up and preparations made to begin testing. Testing of the effect of roller hardness on the viscoelastic properties of tipping adhesives has been initiated with the Mark 9 simulator. Rollers have been fabricated from rubber of varying hardnesses (Durometer ratings of 20, 50, and 95). The preliminary results indicate that roller hardness has an effect on the rate of viscosity change during machining.

II. **MENTHOL STUDIES (T. V. Van Auken)**

A. **Objective**: Determine the diffusion rate and solubility of menthol in cellulose acetate.

B. **Results**: The facilitation by water of menthol sorption in CA has been confirmed. The effect appears to be a kinetic phenomenon.

III. **OPERATIONS SUPPORT (P. Henderson, in collaboration with the Applied Technology Group)**

A. **Objective**: Characterization of inks.

B. **Results**: The three month factory "operating window" study has been completed. The data is being collated and evaluated to determine the direction of future work.

IV. **OPERATIONS SUPPORT** (D. Driscoll in collaboration with the Applied Technology Group)

A. **Objective**: Characterization of side seam adhesive application.

B. **Results**: A simulator for side seam application with flow measurement and control has been installed.

The initial work to define flow as a function of reservoir size, reservoir configuration, and nozzle size has been completed. The data is currently being assessed to determine future work.

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